"CROWN" ROTARY PNEUMATIC DRILLS

INGERSOLL-RAND COMPANY
11 BROADWAY, NEW YORK
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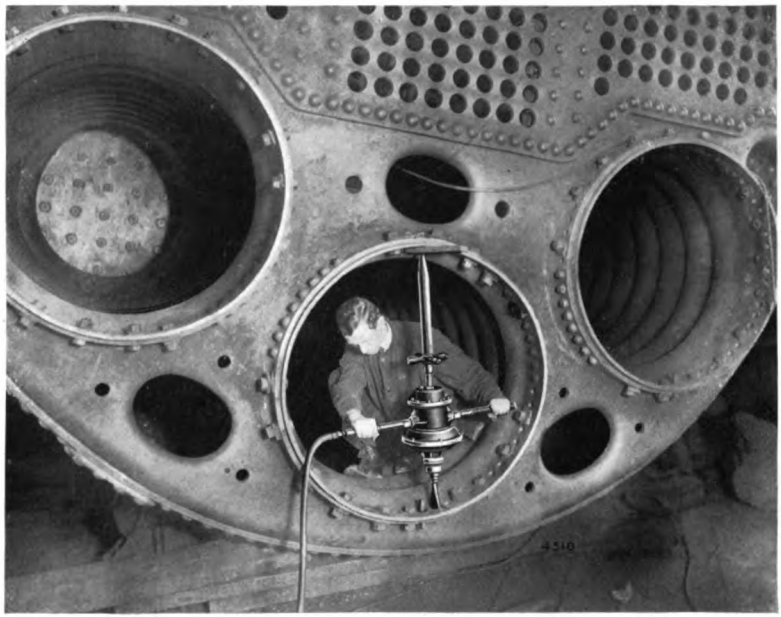


"Crown" Drill on a Marine Boiler Job

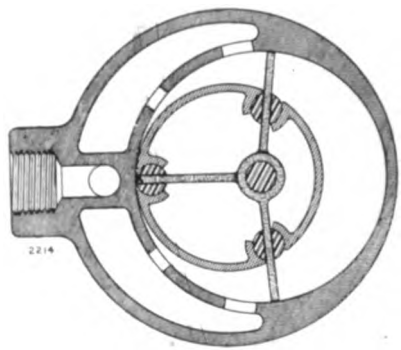
THE "Crown" Rotary Pneumatic Drill differs from the "Imperial" Drill, also built by the Ingersoll-Rand Company, in the fact that it uses a rotary motor, as distinguished from the three-cylinder piston motor of the "Imperial." The distinctive feature of the "Crown" Drill is its simplicity, which comes from the use of the rotary motor having remarkably few parts.

In details of construction, "Crown" Drills measure up to the most exacting standards. Steels used are of selected quality, and are hardened or toughened as requirements demand. Anti-friction metals are judiciously applied in the bearings. Cast metal parts are of a tough, uniform texture. Weight has been reduced to the limit without sacrifice of the strength and rigidity

so essential in a high-class tool. Parts are strictly interchangeable and are "guaranteed to fit." Every improvement looking to convenience and ease of operation has been used. The finished product is a drill light, convenient, powerful, economical and reliable, equal to the most severe demands with continued satisfactory operation.

The "Crown" Motor

The diagram herewith shows a section through the motor of the "Crown" Drill. The cylinder bore is eccentric to the drill spindle; the piston is concentric with the spindle, but eccentric to the cylinder. Three radial blades pivoted on an eccentric pin pass through slotted rocker pins in the piston wall. Air pressure on these blades forces them- and the piston with them- around in the cylinder, causing the rotation of the shaft.



Sectional Diagram of "Crown" Drill Motor

All rotating parts turn on their own centers, without reaction, side thrust, or unbalanced pressure on bearings or cylinder wall. Wear comes first upon the eccentric pin bearing, which is exceptionally large. The blades normally just clear the cylinder walls; if their bearing wears, centrifugal force throws them out and they automatically grind to a proper fit in the cylinder. The travel of the blades in the rocker pins is so slight that wear here is negligible. No rotary motor ever designed is so well guarded against depreciation and loss of efficiency due to wear. It is to be noted that there is almost no clearance space—another important factor in economy.

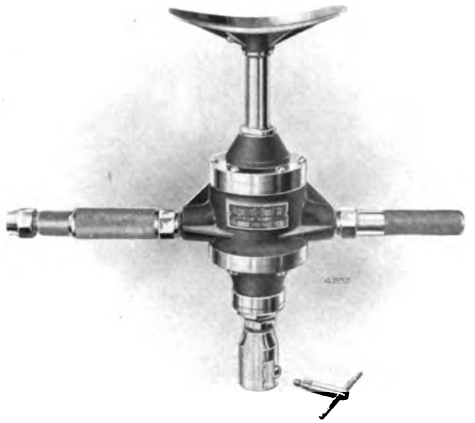
All principal bearings have renewable bushings. The space between upper cylinder head and top casing is filled with oil which slowly feeds to all parts of the drill. The hollow piston is also filled with a grease which lubricates the interior bearings. Air is admitted through one handle provided with a quick-acting throttle. Reversible types have in addition a reversing lever on the upper casing. Speed is regulated by varying the air supply with the throttle.

On the opposite page are tabulated specifications of the complete line of "Crown" Drills, giving the important dimensions and the work for which each size is adapted. On pages 4 to 7 inclusive the eight standard "Crown" Drills are illustrated in their relative proportion.

Specifications of "Crown" Pneumatic Drills

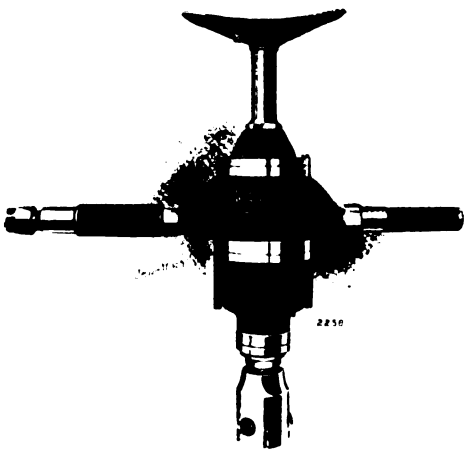
Style.	Symbol.	Weight, lbs.	Length of Feed, Inches.	Shortest Dist. Center to Edge, Inches.	Morse Taper Socket.	Sq. Tap Socket.	Maximum Diameter of Tool For Which Adapted, Inches. Drill.	Reamer.	Tap.	Flue Roller.	Wood Bit.	R. P. M. Spindle at 80 lbs.	Cu. Ft. Free Air per Min. at 80 lbs.	Hose Con., Inches.
Non-Reversible	1R	14	..	2	1	..	3/8	..	..	..	1	700	40	1/2
" "	12R	17	2 3/4	2	1	..	19/32	..	..	.	.	425	40	1/2
" "	13R	28	2 3/4	3 1/2	3	5/8	1 1/4	13/16	1	..	..	300	50	1/2
" "	16R	55	3 3/4	4 5/8	4	1	2	1 1/4	1 1/2	..	..	200	70	1/2
Reversible	14R	30	2 3/4	3 1/2	3	5/8	1 1/4	13/16	1	2	..	300	50	1/2
"	15R	25	..	3 1/2	..	..	..	..	..	..	3	215	50	1/2
"	5R	57	3 3/4	4 5/8	4	1	2	1 1/4	1 1/2	3	..	200	70	1/2
"	6R	62	3 3/4	4 5/8	4	1	3	2 1/2	2 1/2	4	..	75	70	1/2

Non-Reversible Drills



No. 1R "Crown" Pneumatic Drill

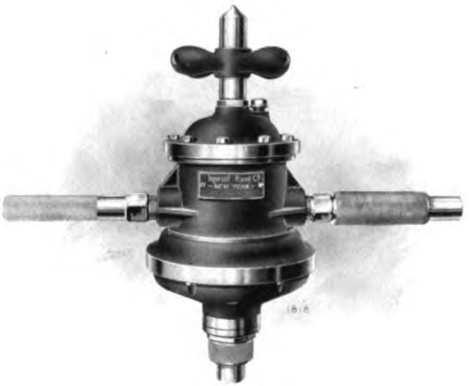
For Wood Boring and Metal Drilling. For Wood Boring, Fitted with Spade Handle and ½ x 2 inch Auger Chuck. For Metal Drilling, Fitted with Feed Screw and No. 1 Morse Taper Socket, or with Breast Plate and Two-Jaw Chuck.



No. 12R "Crown" Pneumatic Drill

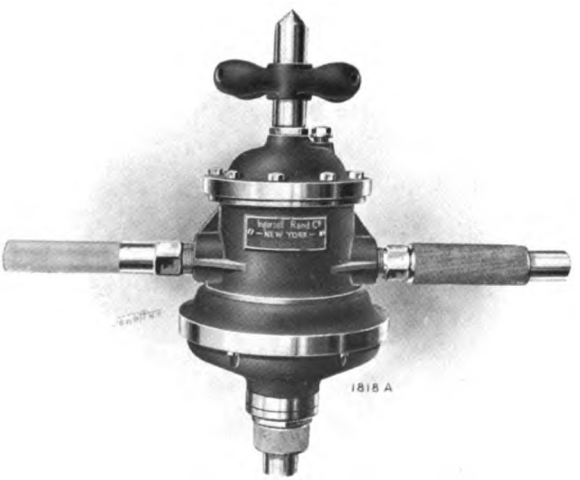
For Metal Drilling. Standard Machine Fitted with Feed Screw and No. 1 Morse Taper Socket. Breast Plate and Two-Jaw Chuck Substituted on Order.

Non-Reversible Drills



No. 13R "Crown" Pneumatic Drill

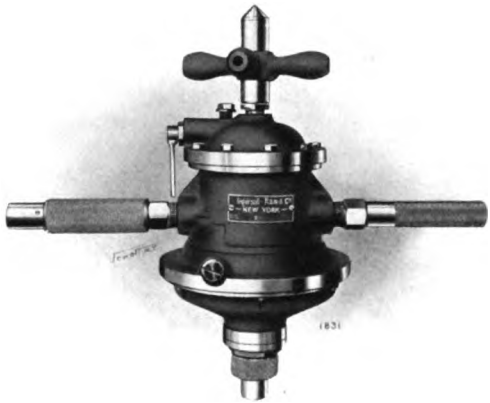
For Drilling, Reaming and Tapping. Fitted with No. 3 Morse Taper Socket and ⅝-inch Square Tap Socket.



No. 16R "Crown" Pneumatic Drill

For Drilling, Reaming and Tapping. Fitted with No. 4 Morse Taper Socket and 1-inch Square Tap Socket.

Reversible Drills



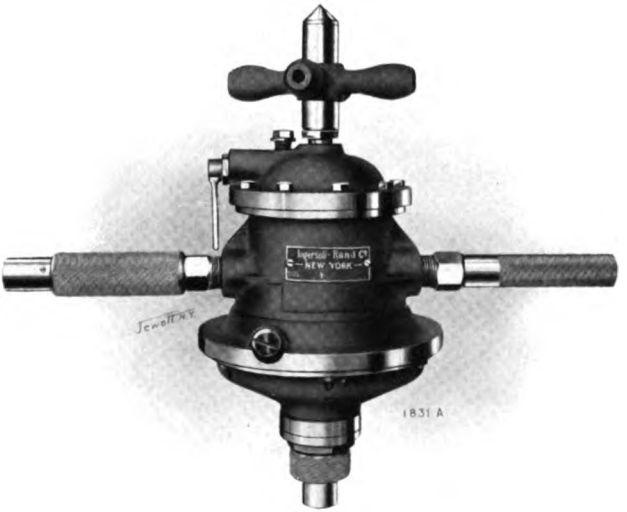
No. 14R "Crown" Pneumatic Drill

For Drilling, Reaming, Tapping and Flue Rolling. Fitted with No. 3 Morse Taper Socket and ⅝-inch Square Tap Socket.

No. 15R "Crown" Pneumatic Drill

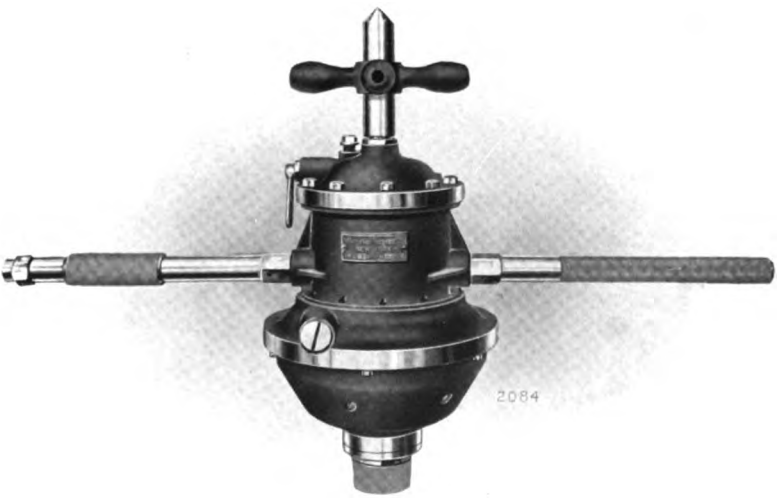
For Wood Boring Only. Fitted with Spade Handle and ½ x 2-inch Auger Chuck.

Reversible Drills



No. 5R "Crown" Pneumatic Drill

For Drilling, Reaming, Tapping and Flue Rolling. Fitted with No. 4 Morse Taper Socket and 1-inch Square Tap Socket.



No. 6R "Crown" Pneumatic Drill

For Drilling, Reaming, Tapping and Flue Rolling. Fitted with No. 4 Morse Taper Socket and 1-inch Square Tap Socket.

Care of "Crown" Drills

CAREFUL and systematic attention to the cleaning and proper lubricating of "Crown" Drills will show large returns on the time and effort expended.

The motors of these machines run at a very high speed, and proper lubrication is absolutely essential to keep them in good working order. The workmanship in these drills is of a very high grade in order to insure high efficiency, and the working parts must be protected by adequate lubrication from cutting or undue wear. Otherwise the power of the machine will be seriously reduced and wear made more rapid.

Kerosene is the best medium for cleaning the machine; and if the drill has not been used for several days a liberal supply of kerosene should be poured in the end of the handle and the machine run for a few minutes. This will cut or loosen any accumulations of thick oil, and the drill should then be oiled with some heavy-body lubricating oil.

Steam cylinder oil is the proper lubricant to use for "Crown" drills. The Ingersoll-Rand Company particularly recommends its special brand known as "600 W" Cylinder Oil, a sample of which is furnished with each machine.

Light oils should never be used in these machines, as they are carried through with the air and have no lasting qualities for motors of this type.

Filling the inside of the piston with a heavy grease will prevent the motor from heating up when used in continuous service.

Drills when new and first started should be oiled at least once an hour for the first two or three days and every two hours thereafter when in operation.

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